

**GUJARAT UNIVERSITY**  
**B.E. SEM V EC**  
**SUB : EC-504 Microprocessor & Peripherals**

Teaching Scheme			Examination Scheme					
Lectures Hrs./week	Tutorial Hrs./week	Practical Hrs./week	Theory marks	Paper Hrs.	Sess Marks	Pract/Oral Marks	TW Marks	Total Marks
4	-	2	100	3		25	25	150

**1. Introduction to Basic Computer: -**

Block diagram of digital computer, classification of digital computer language, high level & low level languages. Microprocessor architecture & Microcomputer system, memory, input/output, interfacing devices

Introduction and brief overview of 8- bit processors – Intel’s 8085

**2. 16 bit processors Architecture and Instruction Set:-**

Intel family of 16-bit processors, Architecture of 8086/8088 CPU, Instruction set of 8086 microprocessor.

**3 Programming Techniques:-**

Logical & Arithmetic processing, loops, procedures, data tables, modular programming, Macros, assembler directives, assembly language program development tools.

**4. Designing the 8086 CPU module:-**

Three- bus system architecture, 8086 CPU hardware design, Generation of system clock and reset signals, Micro computer bus types and buffering techniques, 8086 minimum and maximum mode module, 8088 microprocessor.

**5. Main memory system design**

Types of memory, CPU read/write Timing, SRAM and ROM Interface Requirements, Address Decoding Techniques, Inter facing Dynamic RAM, Troubleshooting Memory Module.

**6. Basic Input/Output**

Parallel I/O, Serial I/O, Programmed I/O, Interrupt - driven I/O, directed memory access.

**7. Support Peripheral chips - Architecture, Modes of operation & interfacing**

Programmable Peripheral Interface (PPI) 8255, Universal Synchronous/Asynchronous Receiver/Transmitter (USART) 8251, Programmable Interrupt Controller (PIC) 8259, DMA Controller 8237/57, Key board and display controller 8279,

**8. Digital & Analog Interfacing**

Interfacing of keyboard, displays, A/D and D/A converter, stepper motor, microcomputer based scale and applications

## **9. Data communication standards**

The current loops, interface, RS-232-C serial interface standard, GPIB bus IEEE – 488

### **Practical/Term-work**

Practical/Term-work will be based on the topics covered in the syllabus

### **Text book :-**

- (1) The 8086/8088 Family – Design, Programming and Interfacing by John Uffenbeck (PHI)
- (2) Microprocessor and Interfacing – Second Edition by D. V. Hall (TMH)

### **Reference book :-**

1. The Intel Microprocessors – Architecture, Programming and Interfacing –Sixth Edition by Barry B. Brey (PHI)
  2. The 8088 and 8086 microprocessor by W. A. Triebel and Avtar Singh (PHI)
  3. Microprocessor Architecture Programming and Applications by R. S. Gaonkar (WEL)
- IBM PC Assembly Language and Programming by Peter Abel (PHI) – For Laboratory work